THE ROLE OF INSTITUTIONAL RURAL PROPERTY IN DIVERSIFIED INVESTMENT PORTFOLIOS IN NSW, AUSTRALIA

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ABSTRACT

The food and fuel crisis experienced in 2006 to 2008 has highlighted the importance of agricultural commodity production throughout developing and developed economies and has placed greater awareness and importance on rural property and rural property markets. These factors have led to an increased interest from major property investment institutions and property companies in the role of rural property in a mixed asset or mixed property investment portfolio. This paper will analyse rural property sales in New South Wales for the period 1990-2008, and will compare total return performance across a number of rural property sectors based on geographic location and land use type. These results show that the inclusion of rural property in an investment portfolio has benefits in relation to return and risk.

Keywords: Rural land, farmland values, rural land total returns, capital and total returns

INTRODUCTION

Farmland, as a real estate investment asset, is still relatively obscure because of the lack of liquid and marketable farmland investment vehicles that trade in well established secondary markets. However, farmers are using more and more leased land as an important source of financing their operations as average farm size grows. Approximately 50% of farmland in Canada and the United States is now leased by farm operators and the demand for leased land is growing as average farm size continues to increase (Painter, 2005; Painter, 2007), which implies a growing demand for farmland investors. Although there have been a number of rural property investment trusts established in Australia and New Zealand, the number is significantly less than other property types (PriceWaterhouseCoopers, 2004). But even if a liquid and marketable farmland investment vehicle is available, the average investor needs to know whether farmland is a good mix in their portfolios. What are the risk-return characteristics of a farmland investment and what is the impact on portfolio performance when a farmland investment is added to the portfolio?

Over the past 10 years, there has been a growing interest in investment in rural property from both the individual and institutional investors. The benefits of investing in rural property are quoted by the investment funds and agribusiness advisors as:

- **"Portfolio diversification:** Agricultural investments are influenced by seasonal variations in crop production which contributes to price volatility for agricultural commodities. Additionally, most agricultural investments are not traded on a stock market. These factors often cause agricultural investments to generate returns that are not synchronised with those of traditional asset classes.

- **Capital growth:** A significant portion of rural property trust funds are invested in land and water assets. These assets have the potential to appreciate in value, particularly when coupled with quality developments. Land and water assets have the potential to appreciate in value.

- **Unique asset class:** A large proportion of institutional rural property ownership provides exposure to the newly developing water and carbon sequestration markets. The importance and value of water and carbon is expected to increase as these markets expand and mature" (Rural Funds Management, 2009).

These investment company claims have also been supported by academic research based in the UK, US, Canada, Australia and New Zealand. More recent rural land investment performance studies by Painter (2008), Eves and Painter (2008), Nartea and Eves (2010, 2008 and 2007), and Newell and Eves (2009) found that rural property did provide portfolio benefits to both mixed-asset and mixed-property investment portfolios and in the case of Australian, US and New Zealand rural property, the addition of this asset also reduced the overall risk of the portfolio due to the low positive and often negative correlation between rural property returns and the returns from all other investment assets.

Studies by Eves (2010, 2004, 1997) have shown that rural property returns vary significantly from both a land use and geographic basis, providing the opportunity to reduce overall risk by diversification. These studies have also shown significant variation on a sub-period basis and the availability of additional annual data provides a more beneficial analysis of the role that rural property can play in a diversified investment portfolio. This study provides a more robust analysis of the NSW rural property market, with the study period covering over 25 years of rural land capital and total return data

Previous studies investigating the performance of US farmland in an investment portfolio have found that US farmland was an inflation-hedge (Newell and Eves, 2008; Rubens and Webb,1995; Rubens et al, 1989), provided portfolio diversification benefits (Hardin and Cheng, 2002; Kaplan, 1985; Lins et al, 1992) and enhanced portfolio performance (Hardin and Cheng, 2002; Lins et al, 1992; Webb and Rubens, 1988), even at restricted farmland allocations (Lins et al, 1992). However, under conditions of uncertainty, the benefits of farmland are diminished (Hardin and Cheng, 2002), with a lesser case for farmland in a portfolio under a downside risk formulation and being more suitable for those investors with farmland investment expertise (Hardin and Cheng, 2005).

Higgins (2004) agreed that rural property can provides these significant benefits to investors, but the investor in the rural property sector needs to understand this particular property market. The issue that has been identified in this case is that direct rural property ownership may not provide the same investment returns as direct ownership of other investment grade property such as office or industrial property. However, the same article by Higgins (2004) also states that the large, well structured, land use and geographic diverse rural holdings of the larger investment funds and companies can now achieve high level returns under successful management.

Another issue in relation to rural property investment, particularly in comparison to other property sectors, is that the total return for rural property is predominately from capital growth rather than income return (Eves, 2010; Hargreaves and McCarthy, 2010). However, according to The Australian Farm Institute (2009), the top 25% of Australian farmers have consistently shown a ROI of 10% or above for the past decade, despite seasonal and commodity price volatility. Rural land in Australia covers an area of 488 million hectares, of which it is estimated that family units provide the organizational basis for 94% of farms. Corporate-ownership in the farming sector tends to be widespread only in a few specific industries, notably cotton, viticulture, wool and beef production (Eves, 2010a; Tonts et al, 2003).

The growing acceptance of rural property as an institutional class investment asset is evidenced by the increasing corporate and institutional ownership of rural property, especially in limited agricultural subsidy countries such as Australia and New Zealand. This level of international investment has been in both the rural property market and the agricultural commodity market. According to Franklin and Vasek (2010), the Foreign Investment Review Board approved the sale of agricultural land and agricultural companies to the value of AUD$2.8 billion to buyers from US, UK, Japan, Canada, Netherlands and UAE in 2008/2009. This excluded individual rural property purchases to foreign corporates and institutions for the same period, to the value of AUD$327 million that were below the FIRB threshold of AUD$231 million

for approval purposes. In 2009, Macquarie group and Terra Firma alone spent over AUD$1.3 billion on Australian cattle properties (Eves, 2010a).

There are now a number of listed and unlisted property trusts, which include an exposure to rural property, particularly in the US, as well as funds that are constructed only from rural property. In Australia, the Macquarie Group Rural Trust has invested in excess of AUD$550 million in rural property and Rural Funds Management has rural property to the value of AUD$300 million under management (Eves, 2010a).

Foreign ownership of rural property in Australia is governed by the same rules as commercial, industrial and retail property. Provided the value of the property is less than AUD$231 million, no approval is required. As no single large rural property has been sold in excess of this figure, an overseas investor can purchase rural property in Australia and over time can establish significant holdings. The ability to acquire large rural holdings in Australia is an attractive prospect for institutions or organisations focusing on food security.

RESEARCH METHODOLOGY

Rural property series

The Australian rural property total return performance series used in this study is constructed from the NSW Rural Property capital index over the period 1990-2008 to determine the capital returns and the ABARE Farm Survey Reports from 1990-2008 to assess the average annual farm net profit for each of the main NSW rural land use areas. The Capital return index is a transaction based index compiled by the author on a biannual basis. Adopting the boundaries of rural Local Government Areas allows the sales transaction data to be matched with the ABARE farm income data. The following rural property series were used in this study:

- Total Return NSW rural property
- Total Return NSW rural property (weighted)
- Land Use (Total Return)
    - High Rainfall,
    - Mixed Farming,
    - Pastoral Grazing.

While this rural property data only represents approximately 35% of the total value of Australian rural property, it does provide significant coverage and representation of rural property return performance across all Australian rural regions, as well as areas of high concentration of corporate rural property ownership. As such, it can be seen as a reliable measure of rural property performance over the period 1990-2008.

Other investment performance series

For comparative performance analysis and mixed-asset portfolio considerations, the following quarterly total return series were used:

- Real estate: PCA/IPD total, office, retail, industrial series
- Stocks: ASX All Ordinaries series
- Bonds: RBA 10 year bond series.

The PCA/IPD indices are based on investment grade property owned by the major investment companies and institutions in Australia. These portfolios are predominately prime grade buildings in capital city locations and the index cannot be considered to represent an average return for these various property classes in Australia. The top 20% of farmers in Australia also tend to own the best rural properties in the better locations for the specific agricultural land uses. The comparison of the top 20% of farmers to the PCA/IPD index is the more realistic scenario than the NSW average.

RESULTS

Total returns

The total return data includes the income returns for the three main rural land use classifications in NSW as recorded by the Australian Bureau of Agricultural and Resource Economics (ABARE). ABARE carry out an annual survey of Australian farmers and compile a summary of the average income and costs for Australian agriculture. These statistics are also recorded on the land use basis of high rainfall areas, mixed farming areas and pastoral areas. The total returns based on the NSW average farmer, on a land use basis, are shown in Table 1.

Table 1 shows that over the period 1990-2008, the weighted average annual total return for NSW rural land was 8.70%, with a volatility of 6.29% and a risk-return ratio of 1.38. On a land use basis, the best performing land use based on total return, was Mixed Farming (9.62%), with the poorest performing land use being Pastoral Grazing (4.29%). On a risk/ return basis, the best performing rural land use sector has the High Rainfall land uses, with a ratio of 1.21. The table also includes a calculation for the total return for the top 20% of rural producers in NSW.

Table 1: NSW rural property annual total returns: Land Use: 1991-2008

Year	High rainfall	Mixed farming	Pastoral grazing	NSW weighted	Rural top 20%
Average annual return (%)	7.71	9.62	4.29	8.70	11.85
Volatility (%)	6.35	8.15	23.58	6.29	8.26
Risk return ratio	1.21	1.18	0.18	1.38	1.43

This calculation highlights one of the biggest issues that are not generally raised in regards to rural property returns. Unlike commercial property, the cash flow generated by rural property is highly variable and subject to a high level of volatility. While other recent survey results from various sources have quoted a return on capital for rural property ranging from 4% to 6% for farming operations, this level of return is associated with the average farming enterprises, not the top end of producers. According to Higgins (2004), if the same returns are quoted based on the top 25% farming performance, this increases to around 8% to 12%, or double that generated by the average farms.

For this analysis, the income returns for the top 20% of NSW farmers have been weighted by an additional 50%. In reality, the best farmers would be achieving an income return in excess of this loading. On this basis, the average annual returns for the period 1990-2008 increase to 11.85%, with the risk/return ratio increasing to 1.43.

Mixed-asset total returns

The following analysis compares the total returns from NSW agricultural property (average and top 20% basis) to alternate investment assets in Australia. Table 2 shows the sub-period total return and risk/return performance of the main Australian investment assets over the period 1990 to 2008.

From this table, it can be seen that the total return performance for rural property has not tracked the performance of the other property assets. Over 2008, rural property shows a positive total return of 6.1% for the average and 7.3% for the top 20%, where office and industrial property had a negative total return and the total return for retail property was only 0.2%. Over the full period, the best performing assets have been retail property, top 20% rural and shares on a total return basis. However, on a risk/return comparison, the best performing asset has been retail property (2.64) followed by industrial property, then the two rural property asset classifications. On the basis of risk-adjusted performance, the Sharpe ratio shows the best performing

assets, in order, over the study period were retail property, rural (top 20%) and industrial property.

Table 2: Mixed asset total return: sub period summary

	Composite property	Retail	Office	Industrial	Rural (weighted average)	Rural (top 20%)	Shares	Bonds
Last 12 months	-0.2	0.2	-0.4	-1.9	6.1	7.3	-40.4	18.4
3 years	12.4	11.0	14.3	9.8	4.4	4.5	0.8	8.3
5 years	13.4	13.3	13.5	11.9	7.1	8.5	10.2	8.1
10 years	12.1	13.1	11.0	12.4	9.5	12.5	9.4	6.5
15 Years	11.5	12.2	10.6	13.5	8.7	11.8	9.3	7.3
1990-2008	8.77	11.75	7.24	11.15	8.70	11.85	11.94	8.95
Volatility	7.71	4.44	9.45	7.19	6.29	8.26	18.44	7.75
Risk Return ratio	1.14	2.64	0.77	1.55	1.38	1.43	0.65	1.15
Sharpe ratio	-0.02	0.63	-0.18	0.31	-0.04	0.35	0.16	

Figure 1 represents the total return indices for the Australian investment assets. This figure shows that on a total return basis alone, the best performing asset has been shares, with retail and industrial property outperforming office property, rural property and bonds.

Figure 1: Mixed asset total return index: 1990-2008

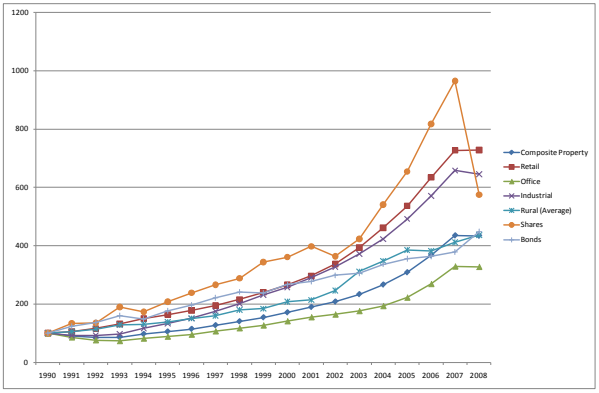
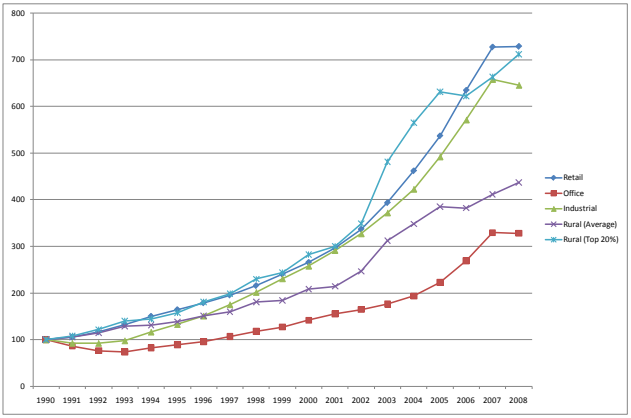


Figure 2: Mixed property total return index: 1990-2008



The total return indices for the mixed-property assets only are shown in Figure 2. This figure shows that the total return for the top 20% of NSW rural property has been consistent with the overall total returns for retail and industrial property and actually outperformed these assets during the period 2001 to 2006. Both rural property classifications have consistently outperformed office property in Australia from 1990 to 2008.

OPTIMUM PORTFOLIO ALLOCATIONS

However, from an investment portfolio perspective, the relationship between these average total returns is of more importance. The previous analysis has shown a significant difference between the volatility and risk-return ratios of the various investment assets. Table 3 provides the correlation matrix between these investment assets.

Table 3: Mixed - asset correlation matrix: 1990-2008

	Composite property	Retail	Office	Industrial	Rural (average)	Rural (top 20%)	Shares	Bonds
Composite property	1.00							
Retail	0.69*	1.00						
Office	0.97*	0.55*	1.00					
Industrial	0.92*	0.65*	0.87*	1.00				
Rural (Average)	0.01	0.23	-0.12	0.00	1.00			
Rural (Top 20%)	-0.03	0.20	-0.17	0.01	0.96*	1.00		
Shares	0.10	0.49*	0.04	0.12	0.04	0.09	1.00	
Bonds	-0.66*	-0.62*	-0.59*	-0.70*	0.10	0.07	0.10	1.00

*Significant at the 5% level.

This correlation matrix shows that there are no significant correlations between rural property returns and the other investment assets in Australia. In fact, there is only an insignificant positive correlation between rural and retail (r = 0.23) and top 20% rural and retail (r = 0.20). The correlation between rural and industrial is r =0.00 and for rural top 20%, r = 0.01. In respect to the other property classes, the correlation with rural property is negative but not significant.

The total returns, volatility and correlation coefficient have been analysed to determine the optimum portfolio allocations for mixed-asset and mixed-property portfolios for Australian investment assets for the period 1990 to 2008. These portfolio allocations are shown in Figures 3 to 5.

Figure 3 shows the optimum portfolio allocations for a mixed investment portfolio of shares, bonds and property. This figure shows that at the lowest level of portfolio risk of 3.19%, the portfolio consists of 50% bonds and 50% property, with the percentage of property decreasing to zero when portfolio risk reaches 16%, at which point the percentage of shares in the optimum portfolio increases to 80%.

Figure 3: Optimum portfolio allocation: mixed assets: 1990-2008

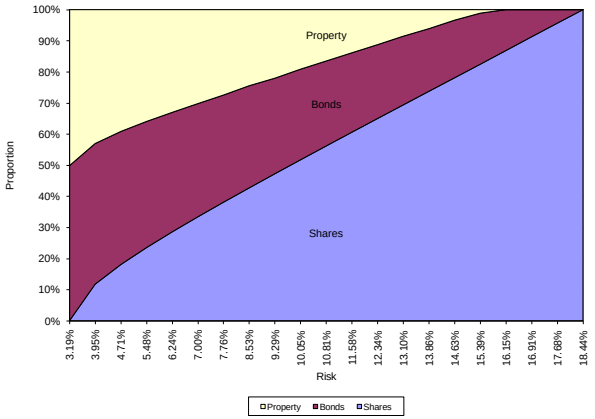
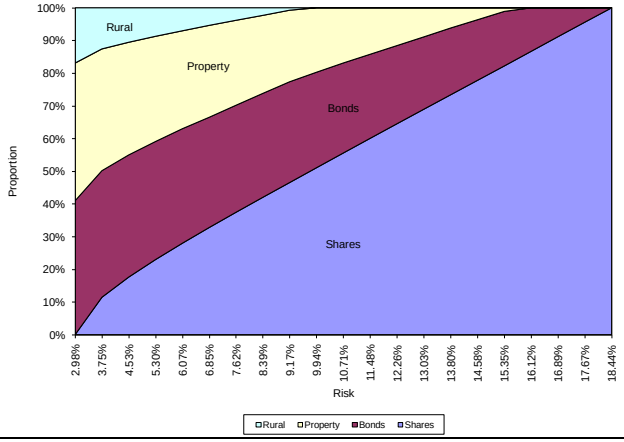


Figure 4: Optimum portfolio allocation: mixed assets + rural: 1990-2008



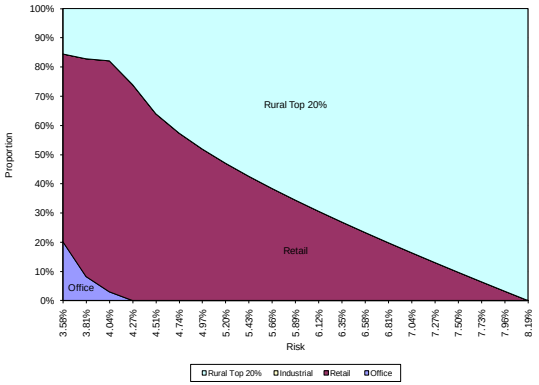
Including rural property (average) into the optimum portfolio reduces the overall portfolio risk to 2.98% and reduces the proportion of bonds and property to 40% and 43% respectively. Rural property replaces other property in the optimum portfolio, but only remains in the optimum investment portfolio until the portfolio risk level reaches 9.94% (refer to Figure 4).

The optimum mixed-property portfolio allocations based on Australian office, industrial and retail property returns for the period 1990-2008 shows that the high returns for retail property over this period combined with the lowest volatility and significant positive correlations with both industrial and office property results in retail dominating the portfolio. At a portfolio risk level of 4.44% and based on this data, retail would represent 100% of the optimum portfolio at risk levels to 4.44%. All other traditional property assets have lower average annual returns compared to retail property and at significantly higher levels of risk.

However, the inclusion of rural property (average) reduces the overall portfolio risk from 4.44% to 4.18% and that rural property enters the portfolio at a 19% allocation at this risk level, but is eliminated from the portfolio once the risk level reaches 4.44%. The inclusion of rural also results in a small percentage of industrial property being included in the optimum portfolio at these low levels of risk

Figure 5 represents the impact of including rural property (Top 20%) into the optimum investment portfolio. This figure shows that the similar total returns between retail and rural (Top 20%) and the insignificant correlation coefficient result in a very different allocation of assets to obtain the optimum portfolio allocations. The inclusion of rural property (top 20%) results in the overall portfolio risk reducing to 3.58%, with rural property representing 15% of the portfolio at this risk level. The proportion of rural property increases to 100% of the portfolio as the risk level increases 8.19%. The negative correlation between rural (top 20%) and office also sees a small allocation of 20% office at the 3.58% portfolio risk level.

Figure 5: Optimum portfolio allocation: mixed property + rural (top 20%): 1990-2008



These results, based on NSW rural property, differ slightly to the results shown by rural property in the US over a similar period. The US results (Newell and Eves, 2007) also showed that rural property had some positive impacts on the optimum portfolio composition, but the sub-period analysis showed that the benefit of including rural property in an investment portfolio has not shown the same benefits as rural property in Australia due to the higher correlation of US rural property returns to US real estate over the period 1996 to 2006.

CONCLUSIONS

Rural property, both on an average and a Top 20% of producers' basis, has shown total return performance equivalent to other property asset classes over the period 1990-2008. This has particularly been the case in regards to both geographic location and also rural land use.

Capital returns are the majority of rural property total returns, with income returns being highest in the mixed farming (irrigation) land uses, reflecting the need to hold this asset class as a longer term investment. The sub-period analysis also shows that the total returns vary across the regions and the land uses.

The variation in capital and total returns for rural property in NSW, over the study period of 1990 to 2008, indicates that rural property can offer diversification benefits for both an investor in rural property, as well as an alternate investment asset for the traditional property or mixed asset investor. These diversification benefits are due to the insignificant and often negative correlations between the returns for rural property and the returns from other investment assets.

In addition, the investor in rural property or rural property owner can also reduce their risk and increase returns by both geographic and land use diversification, as this decreases seasonal and commodity price risk.

This study has shown that including rural property in an investment portfolio decreases mixed-asset and mixed property portfolio risk and can also increase portfolio returns over time.

The volatility of investment markets over the past five years has placed added importance on optimising long term investment portfolios. Trends in rural land prices and returns over the past five years have been greater and more consistent than other assets classes, highlighting their importance in maximising returns and reducing overall investment portfolio risk in the short and long term.

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